



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,797	02/25/2005	Hiroshi Kannan	266746US26PCT	3008
22850 7590 07/22/2009 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
GOLIGHTLY, ERIC WAYNE				
ART UNIT		PAPER NUMBER		
1792				
NOTIFICATION DATE		DELIVERY MODE		
07/22/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/525,797

Applicant(s)

KANNAN ET AL.

Examiner

Eric Golightly

Art Unit

1792

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 17-21 is/are pending in the application.
- 4a) Of the above claim(s) 6, 7, 13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-12 and 17-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-14 and 17-21 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

1. Applicants' response with amendments filed 7/6/2009 is acknowledged. Claims 1-14 and 17-21 are pending. Claims 6, 7, 13 and 14 are withdrawn. Claims 15 and 16 are cancelled.

Applicants' request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn. However, a new Final Action is imposed as outlined below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicants are advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-5, 8-12 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,837,094 to Tsukazaki, et al. (hereinafter "Tsukazaki") in view of US 5,636,287 to Kubli et al. (hereinafter "Kubli").

Tsukazaki teaches a semiconductor manufacturing apparatus (abstract) and discloses: a processing vessel (Fig. 1, ref. 4 and col. 5, lines 31 and 32) which is fully capable of accommodating a substrate; a gas supply system (Fig. 1, ref. 8 and col. 5, line 41), which is fully capable of supplying a cleaning gas (col. 6, lines 51 and 52) or a process gas (col. 6, lines 18 and 19), into the processing vessel; an exhaustor (esp. Fig. 1, ref. 12 and col. 5, lines 48-50); an operating state detector (Fig. 1, ref. 15 and col. 5, lines 53-55); and an end point detector (Fig. 1, ref. 13 and 31 and col. 5, lines 49-51 and 59-64), or means for detecting an end point of cleaning or processing based on a detection result from the operating state detector.

Tsukazaki discloses that the exhaustor includes a pump (not shown, col. 6, lines 6 and 7) and pipe (Fig. 1, ref. 12 and col. 5, lines 48-50), but does not explicitly teach the specifics of the pump or that the exhaustor includes rotor blades; and discloses that

the operating state detector is capable of monitoring particles, but does not explicitly teach that it is capable of detecting effects of collisions between a gas and the rotor blades. Regarding the pump, Tsukazaki discloses the desirability of being able to operate with a range of vacuum levels (col. 5, lines 30-35). Turbomolecular pumps are known in the art and advantageously provide versatility from intermediate vacuum levels to ultra-high vacuum levels. It would have been obvious to one of ordinary skill in the art at the time of the invention to include a turbomolecular pump in the exhaustor of the Tsukazaki teaching with a reasonable expectation of success in order to provide a versatile range of vacuum levels. It is noted that turbomolecular pumps include rotor blades and turbines, or rotatable bodies of revolution. The rotor blades are fully capable of being used to exhaust the interior of the processing vessel by rotation of the rotor blades.

Regarding the capability of detecting effects of collisions between a gas and the rotor blades, Kubli teaches an apparatus useful for the active cancellation of noise and frequency tones emanating from rotating machinery, such as an air moving device (abstract) and discloses a means for detecting effects of collisions between a gas and rotor blades (Fig. 2B, ref. 201, incl. ref. 20, 31 and 33, Fig. 1A, ref. 30, and col. 4, lines 21-26 and col. 5, lines 11-24) (gas collision will cause vibration to emanate from the blade), which reads on the vibration detector, sound wave detector and rotation detector; and discloses that the apparatus advantageously reduces objectionable sounds (col. 1, lines 13-15 and col. 2, lines 29-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the means for detecting a

change in an amount of a gas that collides with the rotor blades as per the apparatus of the Kubli teaching in the operating state detector of apparatus as per the Tsukazaki teaching in order to reduce objectionable sounds. It is noted that the operating state detector of the apparatus as per the Tsukazaki/Kubli teachings is fully capable of being used to determine a change in the amount of the gas that passes through the exhauster.

Regarding claim 17 specifically, the end point detector of the apparatus as per the Tsukazaki/Kubli teachings is fully capable of being used to detect the end point of a cleaning by determining whether the amount of a gas colliding with the rotor blades stabilizes with the progress of the cleaning following a period of initial instability.

Response to Arguments

6. Applicants' arguments, see remarks at page 8, paragraph beginning "Applicants acknowledge"), filed 7/6/2009, with respect to the rejection(s) of claim(s) 1-5, 8-12 and 17-21 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kubli (US 5,636,287).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. JP 08236410 to Nezu discloses an offset sound wave generator. US 4,887,468 to McKendree et al. discloses a blade vibration monitoring system.

8. **THIS ACTION IS MADE FINAL.** Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Golightly whose telephone number is (571) 270-3715. The examiner can normally be reached on Monday to Thursday, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on (571) 272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1792

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EWG

/Michael Kornakov/
Supervisory Patent Examiner, Art Unit 1792